Domain: Number and Operations-Fractions Grade: Fifth

Core Content

Cluster Title: Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Standard 4: Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.

b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.

MASTERY Patterns of Reasoning:

Conceptual:

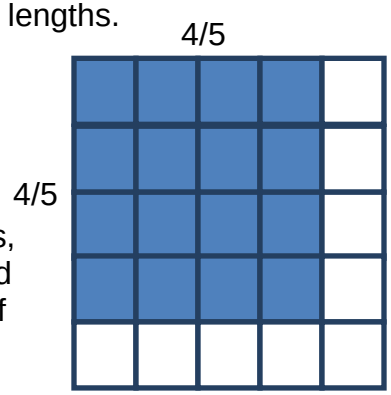
Students will understand multiplication of a whole number by a fraction and a fraction by a fraction.
Students will understand that area of a rectangle is measured in unit squares.

Procedural:

Students can find the area of a rectangle with fractional side lengths by using fraction tiles.
Students can find the area of a rectangle with fractional side lengths by multiplying side lengths.

Representational:

Students can use concrete manipulatives (fraction tiles) to demonstrate area.
Students can use graph paper/dot paper to make pictorial representations of area.
Students can use graph paper/dot paper to show fraction products as rectangular areas, e.g., show 16/25 square units by creating a rectangle of 25 square units (the whole) and coloring in 16 square units (the part) and then determining the fractional side lengths of the resulting rectangle.



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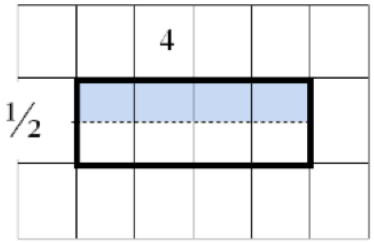
Supports for Teachers

Critical Background Knowledge
Conceptual: Students will understand that area is the number of square units in a figure. Students will understand the meaning of multiplication of a whole number by a fraction. **Procedural:** Students can multiply a whole number by a fraction. Students can use the formula for area: Area = length x width. **Representational:** Students can find area using the dimensions of a rectangle. Students can use tiles and arrays to calculate area.
Academic Vocabulary and Notation
area, length, width, A = lw, square units, x means **OF**, array, dimension

Instructional Strategies Used	Resources Used
 Numerical Representation: 1/2 x 4 = 2	

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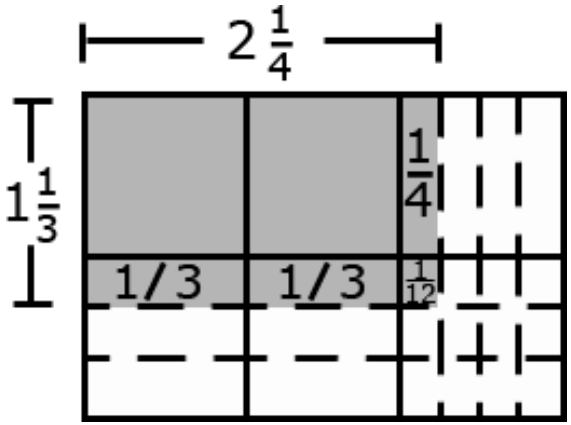
Example of Area Model:



Numerical Representation: 1-1/3 x 2-1/4 = 3

Assessment Tasks Used

Skill-Based Task:	**Problem Task:**
Find the area of a rug that is 3-1/2 feet by 2-1/2 feet.	Mr. Brown is building a sandbox that is 6-1/2 feet by 4-1/2 feet. Draw a model of the sandbox, labeling all dimensions. Find the total area of the sandbox. Explain your answer.

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